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THEORETICAL ISSUES OF FINANCIAL DIFFICULTIES

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Abstract

A central concept of economics means that, in the long run, forces acting under market conditions direct the markets towards balance. Companies producing at average cost and earning normal profit survive on the market in the long run. Companies, which are unable to operate their resources reasonably efficiently, stop their activities and leave the market. When they leave the market not only the owners but all the actors of the market will lose, the suppliers lose market, the users have to look for new suppliers, the employees who temporarily become unemployed increase social costs, etc. It is important to clarify the theoretical and practical context of the companies with financial difficulties whether they survive or leave the market.

In this study I try to clarify the theoretical context of financial difficulties, which may serve as the starting point of a comprehensive amendment of the bankruptcy act, having been in force for 10 years in Hungary.

Keywords: insolvency, financial distress, bankruptcy.

1. Financial Distress and the Institution of Bankruptcy

There are financial difficulties if the company in economic sense is inefficient. This means it is durably unable to operate its resources according to the requirements of normal profit, the capital costs of the company exceeds the proceeds coming from the operation of the assets and the company gets into a status of value destruction: $EP < WACC$, but $V > D$[1].

Financial difficulties become clearly visible both for the outside and inside stakeholders when the company is unable to meet its commitments, becomes insolvent.

Insolvency is the cash flow reflection of unsuccessful business decisions [1].

A company's insolvency may be a temporary liquidity problem, at the same time may come from economic management, which lastingly does not meet efficiency requirements, when lasting $EP < WACC$ status leads to

$$V < D\,.$$

[1] EP = economic profit; WACC = weighted average capital cost; V = value of company; D = market value of company debt

This means that lack of assets is behind insolvency.

The following *Table 1* summarizes the different stages of financial difficulties.

Table 1. Stages of a company's financial difficulties

Stages of financial difficulties	Economic contents of the stages
Stage I (inefficient allocation) the company is still solvent	EP $<$ WACC, but V $>$ D
Stage II (inefficient allocation in the form of insolvency)	EP $<$ WACC, but V $>$ D
Stage III (insolvency with inefficient allocation caused by lack of assets)	EP $<$ WACC, but V $<$ D

Financial difficulties induce changes in the behavior of the affected parties. The company management maximizing values, the owner and the creditor, all the affected parties try to take the most efficient decision when financial difficulties are recognized. The decision promoting efficient capital allocation, the possibilities to recover from crisis in the case of financial difficulties are summarized in the following *Fig. 1*:

In the following we look at the decisions of the outside and inside stakeholders of the companies with financial difficulties. I will summarize the criteria, which determine the decisions leading to different alternatives for eliminating financial difficulties in the case of firms going bankrupt or the ones on the brink of bankruptcy.

First, I deal with bankruptcy (liquidation), then with the bankruptcy-evading proceedings beginning with the perfect market and approaching practice.

2. Liquidation – Financial Position of Debtors, Creditors

In the 50s and 60s, the theoretical issues of financial decisions in connection with financial difficulties and bankruptcy emerged in research aimed at the definition of company value and the role of capital structure in the changes of company value. These researches concentrated on the analysis of investment and funding decisions directed to maximize the value of the operating company.

[2] *Bankruptcy-evading proceeding* is equal to Hungarian bankruptcy proceedings. The debtor during the proceedings makes an attempt at the company's recovery and restoring lasting solvency in addition to an agreement based on reorganization. In Hungary **bankruptcy** is synonymous with liquidation when the creditors will be paid, in accordance with the provisions of the law, from the liquidation assets available after the company is wound up without legal successor.

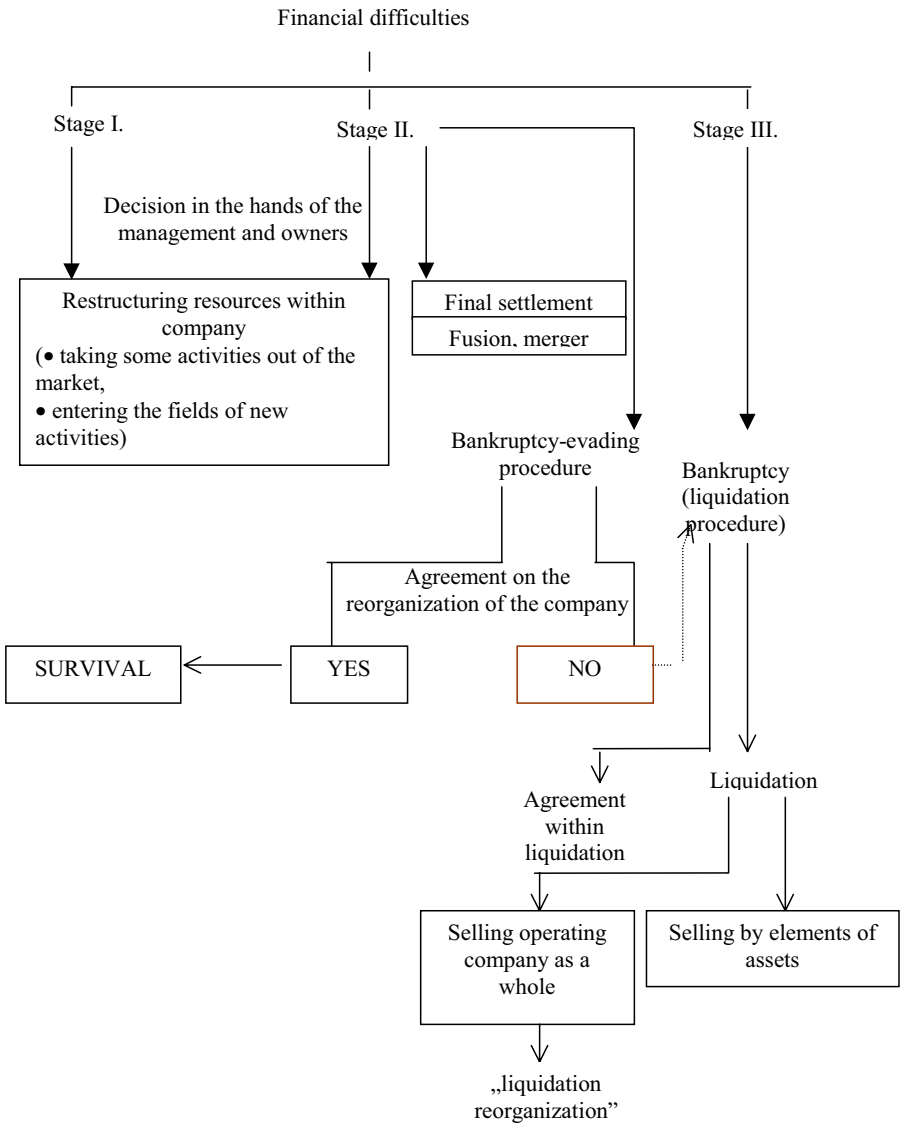

Fig. 1. Alternatives to eliminate financial difficulties[2]

The issue of efficient bankruptcy was involved in analyses in connection with the effect of the costs of financial difficulties on optimal capital structure [2, 3, 4].

HAUGEN and SENBET [5], in their article published in 1978, summarize the theories published in the previous 20 years about the effects of financial difficulties on optimal capital structure. The work of HAUGEN–SENBET [5] describing the

criterion of bankruptcy on the different levels of market efficiency provides an adequate starting point to study the financial issues of efficient bankruptcy.

2.1. Efficient Capital Market and Efficient Bankruptcy

Capital market is efficient if the sale and purchase of no stock at market price means positive net current value transaction, the inside value and the market price of the company are equal [6].[3]

Conditions of efficient market are:

- information is available in the widest possible circle, for all actors of the market,
- access to information is free for everybody,
- consequently all available information interpreted identically and correctly by all actors will be built in the price of the stock immediately.

Resulting from the competition of investment analysts, the prices, rates always reflect the real value of the given asset. The real value contains all the available, widest range of information of the investors interpreted identically at given time. The real value is the intrinsic value of the given asset, which on an efficient market is equal to the market price, rate of the given asset (stock).

Under the conditions of perfect market, the company tackling with financial difficulties will survive, if it creates value. If maintenance leads to loss of value, destruction of value it will be closed down.

Thus the efficient market provides economically efficient capital allocation, where the affected parties, the owners (debtors) and creditors of the company with financial difficulties make identical, economically efficient decision on the liquidation or maintenance of the company on the basis of identical and widespread information. On a perfect market the stakeholders of the company – group of debtors and creditors – judge the position of the company identically. Therefore if the maintenance value (V_M) of the company exceeds its liquidation value (V_L) the company will be maintained, or in the opposite case ($V_L > V_M$) the company will be liquidated.[4]

With efficient, developed market institution system, resources could be allocated efficiently and the institution of bankruptcy would be unnecessary. If acquisition worked perfectly all companies would have buyers, who would pay the affected parties the real value of the company.

‘There is no doubt that in efficiently operating market economies, where the capital market is widespread and covers a broad spectrum of the economy, bankruptcy proceedings have less significance. The more institutional methods for

[3] Quoted work, pp. 225–253

[4] V_M = market value of the company; V_L = liquidation value of the company

Table 2. Efficient bankruptcy criterion on the efficient market

Position of the company	Agreement between the debtor and the creditor	
	$V_L < V_M$	$V_L > V_M$
I. Solvent	No liquidation	Liquidation (shareholders)
II. Insolvent	No liquidation	Liquidation (creditors)

Source: HAUGEN–SENBET, quoted work, p. 390, based on *Table 1*.

changing the ownership of companies exist the less the system is forced to achieve what is not feasible in natural way.' [7][5]

Neither do well operating market economies have efficient capital markets, therefore there are limits to efficient bankruptcy at different levels of market efficiency as a result of information asymmetry and the extent of information asymmetry. In this way the institution of bankruptcy will have a role in promoting economically efficient bankruptcy.

Before looking at the role of bankruptcy promoting efficient bankruptcy, let's see the limits of efficient bankruptcy at different levels of market efficiency and the role of affected parties in making decision on efficient bankruptcy.

2.2. Inefficient Capital Market and Efficient Bankruptcy

HAUGEN and SENBET in their article [5] assume a capital market, where

- the actors accept the prices and behave reasonably,
- there are transaction costs,
- the expectations of the actors are not homogeneous.

The two authors look at the financial positions of the affected parties during liquidation, their decision on the liquidation or maintenance of the company under these conditions. The results are summarized in *Table 3*.

Liquidation (bankruptcy) means the sale of the assets of the company operating its assets with yield below normal profit.

According to the table, decision on the maintenance or liquidation of the company is made according to the following criteria:

1. If the owners and the creditors judge the position of the company identically
   - in the case of $V_L > V_M$ the company will be liquidated,
   - in the case of $V_L < V_M$ the company will be maintained.

[5] Quoted work, page 1070, paragraph 2.

Table 3. Decision on the liquidation or maintenance of the company with financial difficulties on 'almost' efficient capital market

Position of the company	Agreement		Disagreement	
	$V_L < V_M$	$V_L > V_M$	${}_DV_L > V_M$[6] ${}_SV_L < V_M$	${}_DV_L < V_M$ ${}_SV_L > V_M$
I. Solvent	No liquidation	Liquidation (shareholders)	Liquidation (creditors)	Liquidation (shareholders)
II. Insolvent	No liquidation	Liquidation (creditors)	Liquidation (creditors)	Liquidation (shareholders)

Source: HAUGEN–SENBET, quoted work, p. 390.

This decision is independent of solvency. (Insolvency is identified with the lack of assets, where the value of credits (D) exceeds the value of the company (V)).

In the case of $V_L > V_M$

- if the firm is solvent ($V > D$), the owner
- if the firm is insolvent ($V < D$) the creditor who becomes the new owner will make decision on liquidation (or in the case of solvent company, using the Hungarian term, decides on final settlement).

In the case of $V_L < V_M$

- solvent company continues undisturbed operation,
- in the case of insolvency, the creditor would take the place of the owner to maximize the value of the credit and decides on the maintenance of the company, then sells his/her share in the operating firm.

The agreement between the debtor and the creditor on liquidation or maintenance, however, does not mean efficient decision on an inefficient market.

1. If the expectations of the owners and the creditors are not homogeneous, they judge the position of the company differently and any of the affected parties' expectations are in accordance with $V_L > V_M$ position, the company will be liquidated.

2.a. If the creditor thinks that the liquidation value of the company is higher than its market value

$$ {}_DV_L > V_M, $$

while the owner has different expectations

$$ {}_SV_L < V_M $$

[6] ${}_DV_L$ = liquidation value set by the creditors; ${}_SV_L$ = liquidation value set by the owners

the creditor will enforce his/her will in accordance with ${}_D\mathrm{V}_L > \mathrm{V}_M > {}_S\mathrm{V}_L$:

- *in the case of insolvency*, the creditor, as a quasi new owner *liquidates the company*,
- *in the case of solvency, the creditor buys the shares* at $\mathrm{V}_M - \mathrm{D}$ *price, then* (repurchases the liabilities by issuing new shares) *liquidates the firm*. In this way, resulting from the different judgement of the position of the firm, the creditor – he/she hopes – realizes yield of ${}_D\mathrm{V}_L - \mathrm{V}_M$ magnitude.

2.b. If the expectation of the owner is

$$ {}_S\mathrm{V}_L > \mathrm{V}_M, $$

while according to the creditor

$$ {}_D\mathrm{V}_L < \mathrm{V}_M $$

in accordance with the position, ${}_S\mathrm{V}_L > \mathrm{V}_M > {}_D\mathrm{V}_L$, the following decision is made:

- *in the case of insolvency*, the creditor playing the role of the old owner, as quasi-new owner is willing to sell the firm to the old owner at V_M price. Consequently *the old owner will get proceeds of* ${}_S V_L - V_M$ *as a result of liquidation*,
- *in the case of insolvency, the owner decides on liquidation in accordance with* ${}_S V_L > V_M$.

Summarizing, a company is liquidated if the owner and the creditor together or separately think that the liquidation value of a company's assets (V_L) exceeds the value of the expected maintenance, which is the market value of the company (V_M).[7]

In the HAUGEN–SENBET model the decision on liquidation is independent of

- solvency or insolvency, and
- the changes in the capital structure.

Leaving the efficient market and approaching the real market – getting out of the HAUGEN–SENBET's assumption about the 'almost' perfect market – the following issues emerge:

- Agreement between the debtor and creditor on the market value of the company (V_M) is not ensured on less developed capital markets. In the case of companies not listed on the stock exchange, the maintenance value of the companies (let's mark it by V_C[8]) is decisive. Creditors and debtors with asymmetrical information judge it with different expectations.

[7] This model does not require the institution of bankruptcy. It assumes unconditional agreements.

[8] V_C = maintenance value of the company

- Further on, even if the market value is known
  - agreement between the debtor and creditor is not ensured
  - and economically efficient bankruptcy is not guaranteed even if they agree.

The reason is there may be significant difference between the market price and the intrinsic value of the company because of information asymmetry.

The HAUGEN–SENBET model, with the knowledge of the market price (V_M), assumes that the disagreement between the debtor and the creditor comes from the different judgements on the liquidation value of the company. Leaving the assumption of the model, the 'almost' perfect market, Etelka KATITS assumes identity in the debtor's and creditor's expectations regarding the liquidation value and builds her model on the difference of expectations regarding the expectable maintenance value (V_C) of the company [8][9], [9].

In this sense – using the analysis of Etelka KATITS – I have defined the possibility of bankruptcy or maintenance of the company resulting from the financial position of the debtor and creditor, in accordance with the information in *Tables4.a* and *4.b*.

Table 4.a. Decision on the liquidation or maintenance of a company with financial difficulties on inefficient capital market

Position of the company	Agreement		Difference	
	$V_L < V_C$	$V_L > V_C$	$V_L > {}_DV_C$ $V_L < {}_SV_C$	$V_L < {}_DV_M$[10] $V_L > {}_SV_C$
I. Solvent	No liquidation	Liquidation (shareholders)	No liquidation	No liquidation
II. Insolvent	No liquidation	Liquidation (creditors)	No liquidation	No liquidation

1. In the case of *solvent or insolvent* company, if the shareholder and the creditor *agree*

   with status $V_L < V_C$, the company will be maintained,
   with status $V_L > V_C$, the company will be liquidated

   independent of solvency.
2. If the shareholder and the creditor estimate the maintenance value of the company (V_C) and in this way judge the relation of V_L and V_C differently, the following possibilities are given:

[9] Quoted work, Chapter 2.

[10] ${}_DV_C$ = maintenance value set by creditors; ${}_SV_C$ = maintenance value set by owners

2.a. *If there is no agreement* regarding the relation of V_L and V_C

$$V_L > {}_DV_C$$

$$V_L < {}_SV_C$$

which means the affected parties expect the following position

$${}_SV_C > V_L > {}_DV_C$$

- *in the case of solvency*, the shareholders operate the company further without any difficulties,
- *in the case of insolvency*, the owners pay the creditors the value of V_L from increase of capital stock ($D > V_L > {}_DV_C$) and operate the company further.

With ownership share of the new owners corresponding to $\frac{V_L}{{}_SV_C}$, the old owners[11] (who following probable liquidation would leave empty-handed) can keep their ownership share of $\frac{{}_SV_C - V_L}{{}_SV_C}$.

2.b. If there is no agreement regarding the relation of V_L and V_C,

$$V_L < {}_DV_C$$

$$V_L > {}_SV_C$$

which means the interested parties' expectations are in accordance with ${}_DV_C > V_L > {}_SVC$

- *in the case of solvency*, before the owner would decide on liquidation, in accordance with the position $V_L > {}_SV_C$ the creditor ($D < V_L$) is interested in buying the shares at $V_L - D$ value (then following the repurchase of his/her claims financed by issuing further shares) he/she will sell them.
- *in the case of insolvency* the creditor as quasi owner, operating the company further, following the debt-ownership conversion, can decrease the credit loss with a sum corresponding to the value of ${}_DV_C - V_L$ by selling the shares.

If the table representing the HAUGEN–SENBET model is compared to the table compiled on the basis of the analysis of Etelka KATITS, the following conclusions can be drawn:

1. Decision is made about the liquidation of the company on the basis of the comparison of the maintenance value of the company (V_C, V_M) and the liquidation value (V_L).

[11] The old owner, in the case of the acquisition (merger) of the company, can guarantee the conditions of maintenance by sharing the difference ${}_SV_C - V_L$ with the purchaser.

2. According to the argument of HAUGEN–SENBET [5], the maintenance value of the company is the market value (V_M), which is given for both the creditor and the debtor (since the share is traded on efficient market). The difference between the debtor and the creditor comes from the judgement of the liquidation value (V_L). In this way, *if the creditor or the shareholder sets the liquidation value above the market value, the firm will be liquidated*, since it provides arbitrage profit for the one expecting higher liquidation value
3. Based on the analysis of Etelka KATITS [8] we can conclude that in the case of companies not listed on the stock exchange, where there is no market price, or in the case of companies listed on the stock exchange, because of the difference between the market price and the intrinsic value of the shares, the debtor and the creditor may differ in the judgement of the maintenance value (V_C). Assuming agreement on the liquidation value, *the possibility of the company's survival exists, if any party estimates the survival value higher than the liquidation value.*

   Beyond the assumptions of the two concepts, on an inefficient capital market the creditor and the debtor may disagree regarding both the liquidation value and the maintenance value, because of asymmetrical information. Consequently, the company's liquidation or survival depends on the fact who the given shareholder or creditor position will provide higher arbitrage profit in the case of disagreement.

Table 4.b. Decision on the liquidation or maintenance of a company with financial difficulties on inefficient capital market

Position of the company	Agreement		Disagreement	
	$V_L < V_C$	$V_L > V_C$	${}_DV_L > {}_DV_C$ ${}_SV_L < {}_SV_C$	${}_DV_L < {}_DV_C$ ${}_SV_L > {}_DV_C$
I. Solvent	No liquidation	Liquidation	Liquidation or maintenance	Liquidation or maintenance
II. Insolvent	No liquidation	Liquidation	Liquidation or maintenance	Liquidation or maintenance

The extent of arbitrage profit is determined by the difference of the estimates on the value of the company. The problem of asymmetrical information emerged in connection with the maintenance value of the company (V_C). Consequently there may be decisive difference between the owner and the creditor regarding the extent of the maintenance value, which increases the possibility of decision on maintenance indicated in the KATITS model.

In addition to determine the decision criteria, estimates of the shareholders and the creditors on

- the liquidation value of the company and
- the maintenance value of the company

are inevitable to make the decision on the liquidation of the company. This, however, does not lead – because of asymmetrical information – to the enforcement of the criterion of efficient bankruptcy. The enforcement of economically efficient bankruptcy criterion increases with the chance of decreasing information asymmetry.

The essence of *information asymmetry* is not simply insufficient information but a situation where the shareholders of the company (the owners) have access to information on the prospects of the company and the development possibilities, which is inaccessible for the management and the outsiders (in this case the creditors). Asymmetrical information does not simply mean differing estimates on the definition of the company's value (as I have introduced on the basis of the HAUGEN–SENBET model) but the advantage of the shareholders for gaining arbitrage profit.

Imperfect capital market, the given development level of the market institution system, and *asymmetrical information necessitate* the *creation of the institution of bankruptcy* to achieve

- economically efficient bankruptcy,
- and protection of creditors.

No institutionalized creditor protection is needed if the market measures perfectly, everybody makes decision on wide-ranging, identical information basis about the liquidation of the company. In this way all companies are sold at real value, everybody suffers losses as a function of market prices.

On different levels of market underdevelopment, institution of bankruptcy law plays different roles.

2.3. 'Principal – Agent' Problem and Bankruptcy

Adding the problem of *principal – agent* to the problem of *asymmetrical information* shows that the introduction and maintenance of bankruptcy law at the given development level of the capital market is an institution, which helps to meet the requirements of efficient bankruptcy.

The problem of '*principal – agent*' is a *situation described in the theory of company management, where the interests of managers and shareholders*, who depend on each other, *differ*. The manager, who has his/her independent, own interests as agent, influences the situation of the principal as owner with his/her decisions.

On a perfect market, in the world of perfect information provision, no interested parties of a company have information advantage, in this way the relation between principal and client is free of problems. On an imperfect market, however, the principal has to ensure that the client acts on behalf of the principal and enforces his/her interests.

In the case of information asymmetry, the principal

- *obliges*
- *observes, controls*
- *urges* the client to represent his/her interests.

The cost paid by the principal, the 'agency-cost', which is the cost to enforce the interests of the principal.

In this sense the 'agency-cost' means the difference in yields in the case of full access to information and asymmetrical information. The decrease of information asymmetry moderates the agency cost consequently provides higher yield both for the principal and the agent.

JENSEN–MECKLING [10] in their analysis on 'agency-cost' started from a company model, where the company manager is also an owner, who selling his/her ownership right has conflicting interest with the outside owner. The manager, who has smaller and smaller ownership, making use of the information advantage, restructures a part of the company revenue (assets) to his/her own benefit at the cost of the owner. The resulting loss and the cost of the measures taken to prevent the former step constitute the agency-cost. The entering new shareholder tries to limit the increasing, independent interest-enforcement efforts of the management.

JENSEN–MECKLING [10][12] in their work study the problem of 'principal – agent' in order to determine the optimal capital structure. According to JENSEN–MECKLING, the proportion of own and foreign capital is optimal if the marginal (agent)-costs of the funding resources are identical, which means all the 'agency costs' take minimum value. In this way the interest conflict of the management and the owner, as the problem of principal and agent is extended to the relation between the creditor and the owner. All the stakeholders of the company, taking one of the roles of principal or agent, are parts of the revenue-redistributing process resulting from asymmetrical information.

Relating to the issue of efficient bankruptcy, we encounter two sides of the principal – agent problem, the one resulting from different interests of:

a) the owner and the management
b) the creditor and the owner (management).[13]

The stakeholders motivated by clashing interests and ready to make use of information asymmetry, in tense situation (e.g. in the case of the threat of bankruptcy) make decisions leading to significant revenue redistribution, which deteriorates efficient capital allocation by decreasing the chance of efficient bankruptcy.

Following the logic of point 2.2. in the following chapter I will concentrate on the problem of principal – agent between the creditor and owner[14], I will involve the issues of asymmetrical information and risk into the analysis.

[12] Quoted work, pages 344–346.

[13] In Hungarian practice the problem of principal – agent exists between the creditors and the liquidators, too and causes significant conflict of interest.

[14] The analysis of owner – management as the problem of principal – agent is important in the

2.4. The Risk of the Owner and the Creditor

MILLER [12] based his calculations on the theories of 'agency cost', 'principal – agent' by JENSEN–MECKLING [10], and MECKLING [11] and in this context on the problem of creditor and debtor. This shows that the risks of debtor and the creditor are not symmetrical in the decision on the liquidation or maintenance of the company.

The models described in point 2.2. assumed that the debtor and the creditor do not weigh the risk. This condition, however, is not possible in his analysis approaching the real market. *Let us see how the decisions of the debtor and the creditor about liquidation change if risk is involved* by using the numerical example of MILLER [12].

According to WHITE [13], the shareholders and the management[15] decide on the maintenance of operation even if liquidation was economically efficient, this is proved by the example of MILLER:

The debt of the examined company is 1000 (D). The liquidation value of the assets in the case of immediate liquidation amounts to 800 (V_L) unit. The opportunity cost of the capital is 10% (r). If the company operates further it has 50% chance to produce 1210 producer's surplus and there is 50% chance that the losses of the company will further increase and at the end of the examined period the value of the assets will be 220 (V_{L1}) unit.

1. The loss of the creditors in the case of immediate liquidation is

$$1000 - 800 = 200$$

2. The positions of the creditor and the debtor if positive expectations come true
   - Creditor gets his/her claim $D_1 = 1000(1 + 0.1) = 1100$
   - The position of the debtor, the owner also improved by

$$1210 - 1100 = 110 \text{ units}$$

3. The positions of the creditor and the debtor in the case of unfavorable situation.
   - The losses of the creditor grow further and he/she gets a fraction of the value realizable in the case of immediate liquidation.

decision on liquidation. The manager as employee feels the threat of liquidation better than the shareholder. While the shareholder is able for diversification [8; p. 52. par. 1], he/she is able to decrease the loss and the related individual risk resulting from the liquidation of the company by diversifying his/her investments, the management has no such possibility. In the case of financial difficulties, the management would often avoid investment-policy maximizing the owners' value to protect the reputation of the firm and keep jobs, would pursue risk-evading behavior contrary to the owner.

[15] In his article written in 1972, STIGLITZ [14] studied what makes the manager to undertake risky investments if bankruptcy is threatening. His standpoint differs from the concept raised in the previous footnote.

The loss of the creditor is $1100 - 220 = +880$, which compared to the loss of 200 units suffered in the case of immediate liquidation increased by

$$\left(\frac{880}{1+0.1} \cdot 200\right) 600$$

units.

Table 5. Changes in the positions of the creditor and the debtor in the case of asymmetrical risk

Stakeholders	In the case of maintenance	In the case of liquidation
Position of the creditor	$\frac{0.5 \cdot 1100 + 0.5 \cdot 220}{1+0.1} = 600$	$< V_{L1} = 800$
Position of the debtor	$\frac{0.5 \cdot 1100 + 0.5 \cdot 0.1}{1+0.1} = 50$	> 0
Value of the company	$V_{L2} = 650$	$< V_{L1} (= V_L) = 800$

If the company operates further, the owners may improve their financial positions at the cost of the creditors.

The shareholders feel they are urged to invest or continue the business under conditions, which would not be an effective decision with own funding.[16]

This relation leads to drawing two conclusions in connection with the model summarized in *Tables 4.a* and *4.b*:

1. In the case of non-homogeneous information we concluded that if the maintenance value of the company exceeds its liquidation value on the basis of the expectation either the debtor or the creditor, the company will operate further, in the opposite case will be liquidated.
   The involvement of the risk shows that using the advantage provided for the owners by asymmetrical information, the owners are interested in giving up their attempt to maximize the full market value of the company by postponing bankruptcy and following their direct interests they play at the cost of the creditors.[17]

[16] The creditors can protect themselves against such an agency-cost, in this way against their more unfavorable situation if they try to charge the shareholders with all forms of the agency-cost. Then the interest of the shareholders is to decrease the agency-cost by decreasing information asymmetry. (In the case of bankruptcy, however, this attempt of the creditor has no sense).

[17] We can look at these games in Chapter 15 in BRADLEY–MYERS' book [6] (pp. 397–400).

Therefore, the owner can improve his/her financial position even if the market value of the company decreases, he/she is interested in maintaining the company even in the case of $V_C < V_L$.

2. Because of the asymmetrical information and asymmetrical risk resulting from the problem of principal – agent, the decision on the liquidation of the company may be far from the criterion of efficient bankruptcy. Therefore, the bankruptcy law should help efficient capital allocation.

The date of bankruptcy declaration has outstanding role on the decision about the maintenance of the company.

1. Before declaration of bankruptcy, the owner (management) makes financial decisions. In the case of financial crisis, the company, even if there is lack of assets, relying on the resources of the new creditors by priority[18] is able to maintain solvency, to keep liquidity. In this way by preserving ability to operation, it can improve its own financial position at the risk of the creditors (by realizing projects carrying great risk). Thus, as we have seen, *until the declaration of bankruptcy, the shareholders prefer continuing the operation even if more assets are lost and liquidation would be economically more efficient*. The creditors by priority support this effort of the owners.
2. Following the declaration of bankruptcy, however, instead of the owner, the coalition of the creditors and the owner decide on liquidation and this decreases the chance of the owners to make use of their advantage coming from asymmetrical information, asymmetrical risk without control. The decision of the coalition often leads to the liquidation of the company even if maintenance would be economically more efficient. Even if with the declaration of bankruptcy the position is economically efficient, the coalition of creditors and owners without insurance does not undertake maintenance ($V_C > V_L$), if maintenance compared to immediate liquidation is not beneficial for them. In order to reduce the losses of certain creditors' groups, at the end of the list of satisfying the claims the creditors and the owners do not support the maintenance of the company if it does not give better position for them.

Fig. 2 summarizes the conclusions on the liquidation or maintenance of the company. The table reveals that a firm lacking assets is threatened by

- *economically inefficient maintenance* before declaration of bankruptcy,
- *economically inefficient liquidation* following declaration of bankruptcy.

[18] Different creditor groups are threatened by bankruptcy to different extent on the basis of their position in the rank of satisfying their claims, therefore their standpoints regarding maintenance or liquidations are also different. New credit, which the creditor is ready to pay by keeping priority right, is the condition to maintain a company with financial difficulties. The efficiency criterion of maintenance exists for the new creditor if the maintenance value exceeds the value of the insured priority credit. This shows that maintenance of the company is possible even if the bankruptcy, from the point of view of national economy, is inefficient.

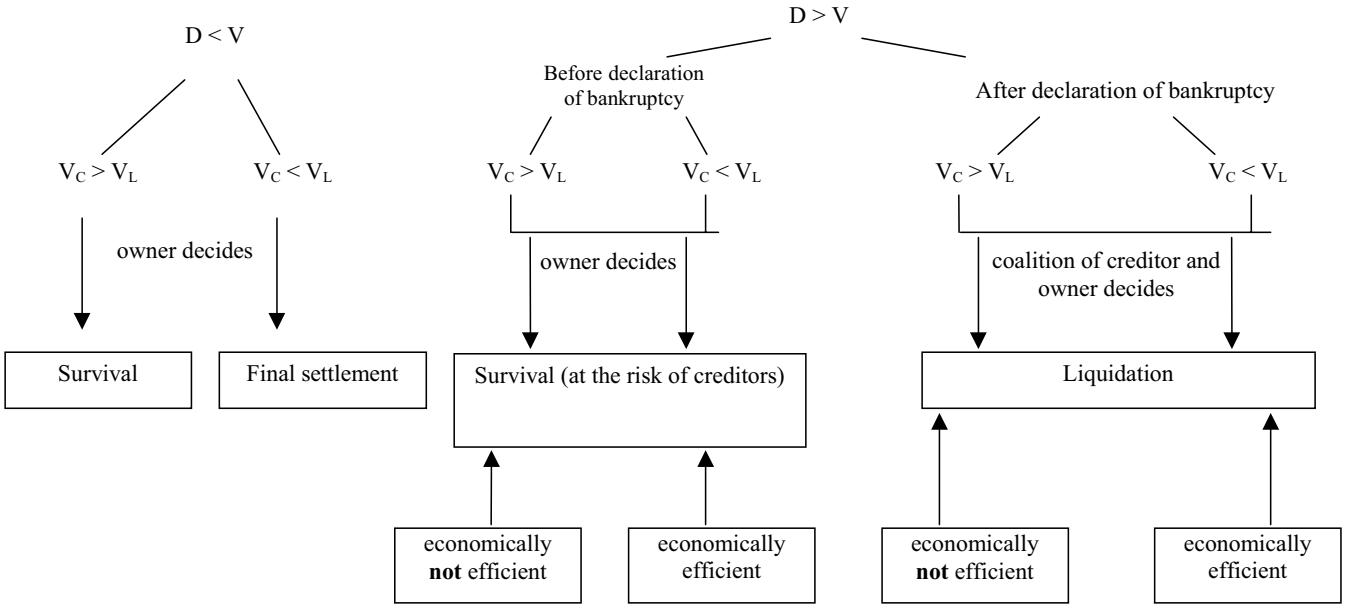

Fig. 2. Decision on the liquidation of the company

One of the issues of efficient bankruptcy in bankruptcy law is the efficient economic criterion of declaration of bankruptcy, institution of bankruptcy proceedings.

3. Optimal Criterion of Declaration of Bankruptcy

Based on the described theoretical relations we can conclude that liquidation is economically efficient if

$$V_L > V_C$$

or maintenance is efficient if

$$V_C > V_L.$$

Disregarding the conditions we used to bring bankruptcy criterion set under the conditions of perfect market nearer to real market, let us return to the starting point, the assumption of efficient capital market, where expectations are homogeneous, risk is symmetrical. Then enforcement of economically efficient bankruptcy criterion is guaranteed, the value, the market price of the company expresses the economically efficient value maximizing strategy. HAUGEN–SENBET [5][19] in their model described in point 2 identify insolvency with the situation when the value of the company (V) is equal to the value of the creditors' claims (D). Then the value of the company's share capital is zero, which in economic sense is the transfer of ownership right to the creditor.

Thus the condition of undisturbed operation of the company is guaranteed until $V > D$. If $V \leq D$ occurs, the creditors become quasi owners, who with the knowledge of the relation between V_C and V_L decide whether as new owners liquidate or maintain the company. *Fig. 3* shows this relation.

A generally accepted criterion of formal or informal institution of bankruptcy proceedings under the conditions of perfect market – starting ownership transformation or the decision on subsequent liquidation or maintenance – is $V \leq D$. Therefore, the *criterion of bankruptcy* gives the criterion of *declaration of bankruptcy* and at the same time the *optimal date of the institution of bankruptcy proceedings.*

- KATITS [8][20], [9][21] revises the relation $V < D$ and refuses the idea of accepting the state of bankruptcy as a criterion of declaration of bankruptcy. As a first step, by defining $V_t < D_t^*$, it sets the 'contract-conform' requirement of 'creditors' claims'. This idea appeared already in the 1881 bankruptcy law of APÁTHY [15, 16], where the question regarding traders is not whether they have enough assets to satisfy the claims but whether they are able for contract-conform satisfaction of given amount at given date.

[19] Quoted work. p. 384.

[20] Quoted work, pp. 57–67

[21] Quoted work, pp. 56–72

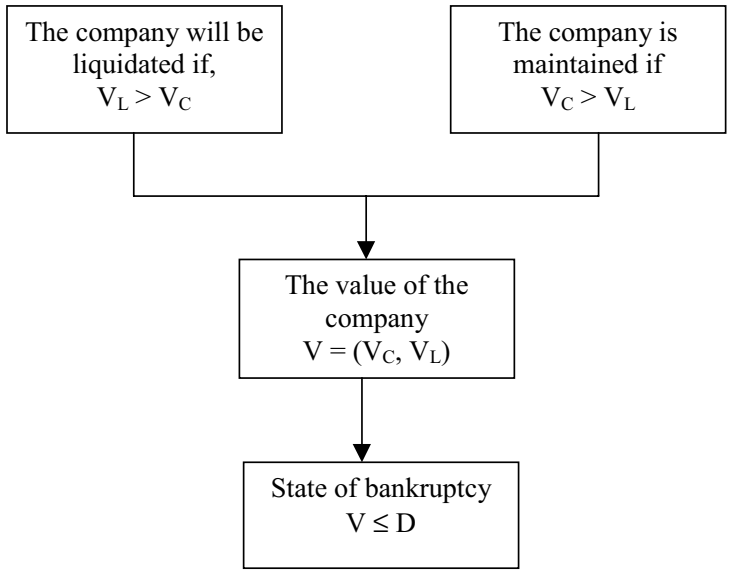

Fig. 3. Definition of bankruptcy

- As the second step it defines the criterion of declaration of bankruptcy in the form

$$D_t^j < D_t^{*j}$$

assuming differentiated creditors' positions, insured and not insured creditors.

> 'Therefore the criterion of declaration of bankruptcy is defined by the comparison of the claims of each creditor's position (D_t^j) and the contract-conform expectations (D_t^{*j}) and not the company value and not the value of all the creditors' claims.' [8]

Etelka KATITS, defines in this way, instead of the global extent of the criterion of bankruptcy declaration its creditor's individual value ($D_t^j < D_t^{*j}$) as the criterion of institution of bankruptcy. In this way putting the date of declaration of bankruptcy before the state $V \leq D$ occurs, she defined a criterion, which guarantees greater protection for the creditor than any creditor's category.

Leaving the assumption of perfect market, however, I think we encounter the main obstacle of enforcing efficient bankruptcy criterion because of measurability. This is the situation when the enforcement of global bankruptcy criterion has fundamental limits, 'fine tuning' has little practical benefit besides theoretical perfectionism.

4. Efficient Bankruptcy and Declaration of Bankruptcy in Numbers

The theoretical criteria of the efficiency of bankruptcy and declaration of bankruptcy have special significance in an economy where the following conclusions can be drawn on the basis of the analysis of 401 liquidation procedures:

- The statements on the assets and liabilities of the companies to be liquidated are not suitable to follow the assets and the creditors' claims. In this way the interested parties are not able to make efficient decision due to the lack of information and asymmetrical information.
- When liquidation proceedings begin in Hungary, $V = D$, the efficiency criterion of declaration of bankruptcy is not enforced in the proceedings. The figures of the representative sample show that the declaration probably occurs at companies to be liquidated when $V = 0$ in 85.5 percent of the cases.
- As a result of assets flight and loss occurring before and during liquidation, the creditors get only 1.58 percent of their announced claims according to the representative sample. This figure supports the statement that the institution of bankruptcy is not able to protect the creditors under the current conditions.

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